

May 24, 2016

Meagan E. Ormand
Golder Associates Inc.
2108 W. Laburnum Ave.
Suite 200
Richmond, VA 23227

RE: Project: BREMO WEEKLY PROCESS
Pace Project No.: 92298698

Dear Meagan Ormand:

Enclosed are the analytical results for sample(s) received by the laboratory on May 23, 2016. The results relate only to the samples included in this report. Results reported herein conform to the most current TNI standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

Analyses were performed at the Pace Analytical Services location indicated on the sample analyte page for analysis unless otherwise footnoted.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Nicole Gasiorowski
nicole.gasiorowski@pacelabs.com
Project Manager

Enclosures

cc: Ron DiFrancesco, Golder Associates Inc.
Martha Smith, Golder Associates Inc.
Mike Williams, Golder Associates Inc



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: BREMO WEEKLY PROCESS

Pace Project No.: 92298698

Ormond Beach Certification IDs

8 East Tower Circle, Ormond Beach, FL 32174
Alabama Certification #: 41320
Connecticut Certification #: PH-0216
Delaware Certification: FL NELAC Reciprocity
Florida Certification #: E83079
Georgia Certification #: 955
Guam Certification: FL NELAC Reciprocity
Hawaii Certification: FL NELAC Reciprocity
Illinois Certification #: 200068
Indiana Certification: FL NELAC Reciprocity
Kansas Certification #: E-10383
Louisiana Certification #: FL NELAC Reciprocity
Louisiana Environmental Certificate #: 05007
Maryland Certification: #346
Michigan Certification #: 9911
Mississippi Certification: FL NELAC Reciprocity
Missouri Certification #: 236
Montana Certification #: Cert 0074

Nebraska Certification: NE-OS-28-14
Nevada Certification: FL NELAC Reciprocity
New York Certification #: 11608
North Carolina Environmental Certificate #: 667
North Carolina Certification #: 12710
North Dakota Certification #: R-216
Oklahoma Certification #: D9947
Pennsylvania Certification #: 68-00547
Puerto Rico Certification #: FL01264
South Carolina Certification: #96042001
Tennessee Certification #: TN02974
Texas Certification: FL NELAC Reciprocity
US Virgin Islands Certification: FL NELAC Reciprocity
Virginia Environmental Certification #: 460165
Wyoming Certification: FL NELAC Reciprocity
West Virginia Certification #: 9962C
Wisconsin Certification #: 399079670
Wyoming (EPA Region 8): FL NELAC Reciprocity

Charlotte Certification IDs

9800 Kinsey Ave. Ste 100, Huntersville, NC 28078
North Carolina Drinking Water Certification #: 37706
North Carolina Field Services Certification #: 5342
North Carolina Wastewater Certification #: 12

South Carolina Certification #: 99006001
Florida/NELAP Certification #: E87627
Kentucky UST Certification #: 84
Virginia/VELAP Certification #: 460221

Asheville Certification IDs

2225 Riverside Drive, Asheville, NC 28804
Florida/NELAP Certification #: E87648
Massachusetts Certification #: M-NC030
North Carolina Drinking Water Certification #: 37712

North Carolina Wastewater Certification #: 40
South Carolina Certification #: 99030001
Virginia/VELAP Certification #: 460222

REPORT OF LABORATORY ANALYSIS

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SAMPLE ANALYTE COUNT

Project: BREMO WEEKLY PROCESS

Pace Project No.: 92298698

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
92298698001	T1-160523-0832-S3	EPA 1664B	JMS	1	PASI-C
		EPA 200.7	CKJ	1	PASI-O
		Trivalent Chromium Calculation	CKJ	1	PASI-O
		EPA 200.8	CKJ	10	PASI-O
		EPA 245.1	ANB	1	PASI-A
		SM 2540D	MJP	1	PASI-A
		EPA 218.7	AEM	1	PASI-O
		EPA 350.1	DMN	1	PASI-A
		SM 4500-CI-E	DMN	1	PASI-A
92298698002	T3-160523-0905-S3	EPA 1664B	JMS	1	PASI-C
		EPA 200.7	CKJ	1	PASI-O
		Trivalent Chromium Calculation	CKJ	1	PASI-O
		EPA 200.8	CKJ	10	PASI-O
		EPA 245.1	ANB	1	PASI-A
		SM 2540D	MJP	1	PASI-A
		EPA 218.7	AEM	1	PASI-O
		EPA 350.1	DMN	1	PASI-A
		SM 4500-CI-E	DMN	1	PASI-A

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: BREMO WEEKLY PROCESS

Pace Project No.: 92298698

Method: EPA 1664B

Description: HEM, Oil and Grease

Client: Golder_Dominion_Bremo

Date: May 24, 2016

General Information:

2 samples were analyzed for EPA 1664B. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Surrogates:

All surrogates were within QC limits with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: BREMO WEEKLY PROCESS

Pace Project No.: 92298698

Method: EPA 200.7

Description: 200.7 MET ICP

Client: Golder_Dominion_Bremo

Date: May 24, 2016

General Information:

2 samples were analyzed for EPA 200.7. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.7 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: BREMO WEEKLY PROCESS

Pace Project No.: 92298698

Method: Trivalent Chromium Calculation

Description: Trivalent Chromium Calculation

Client: Golder_Dominion_Bremo

Date: May 24, 2016

General Information:

2 samples were analyzed for Trivalent Chromium Calculation. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: BREMO WEEKLY PROCESS

Pace Project No.: 92298698

Method: EPA 200.8

Description: 200.8 MET ICPMS

Client: Golder_Dominion_Bremo

Date: May 24, 2016

General Information:

2 samples were analyzed for EPA 200.8. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.8 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: BREMO WEEKLY PROCESS

Pace Project No.: 92298698

Method: EPA 245.1

Description: 245.1 Mercury

Client: Golder_Dominion_Bremo

Date: May 24, 2016

General Information:

2 samples were analyzed for EPA 245.1. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 245.1 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: BREMO WEEKLY PROCESS

Pace Project No.: 92298698

Method: SM 2540D

Description: 2540D TSS, Low-Level

Client: Golder_Dominion_Bremo

Date: May 24, 2016

General Information:

2 samples were analyzed for SM 2540D. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:

All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: BREMO WEEKLY PROCESS

Pace Project No.: 92298698

Method: EPA 218.7

Description: Hexavalent Chromium by IC

Client: Golder_Dominion_Bremo

Date: May 24, 2016

General Information:

2 samples were analyzed for EPA 218.7. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: BREMO WEEKLY PROCESS

Pace Project No.: 92298698

Method: EPA 350.1

Description: 350.1 Ammonia

Client: Golder_Dominion_Bremo

Date: May 24, 2016

General Information:

2 samples were analyzed for EPA 350.1. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

Analyte Comments:

QC Batch: WETA/27723

- MS (Lab ID: 1740518)
 - Nitrogen, Ammonia
- MSD (Lab ID: 1740519)
 - Nitrogen, Ammonia

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: BREMO WEEKLY PROCESS

Pace Project No.: 92298698

Method: SM 4500-CI-E

Description: 4500 Chloride

Client: Golder_Dominion_Bremo

Date: May 24, 2016

General Information:

2 samples were analyzed for SM 4500-CI-E. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

Analyte Comments:

QC Batch: WETA/27720

- MS (Lab ID: 1740406)
 - Chloride
- MSD (Lab ID: 1740407)
 - Chloride
- T1-160523-0832-S3 (Lab ID: 92298698001)
 - Chloride
- T3-160523-0905-S3 (Lab ID: 92298698002)
 - Chloride

This data package has been reviewed for quality and completeness and is approved for release.

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: BREMO WEEKLY PROCESS

Pace Project No.: 92298698

Sample: T1-160523-0832-S3		Lab ID: 92298698001		Collected: 05/23/16 08:32		Received: 05/23/16 14:04		Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual	
Field Data		Analytical Method:							
Collected By	L. HAMELMA N			1		05/23/16 08:35			
Collected Date	05/23/16			1		05/23/16 08:35			
Collected Time	08:32			1		05/23/16 08:35			
Field pH	8.8	Std. Units	0.10	1		05/23/16 08:35			
HEM, Oil and Grease		Analytical Method: EPA 1664B							
Oil and Grease	ND	mg/L	5.0	1		05/24/16 07:59			
200.7 MET ICP		Analytical Method: EPA 200.7 Preparation Method: EPA 200.7							
Tot Hardness asCaCO3 (SM 2340B	84100	ug/L	3300	1	05/24/16 12:29	05/24/16 16:18			
Trivalent Chromium Calculation		Analytical Method: Trivalent Chromium Calculation							
Chromium, Trivalent	ND	ug/L	5.0	1		05/24/16 18:05	16065-83-1		
200.8 MET ICPMS		Analytical Method: EPA 200.8 Preparation Method: EPA 200.8							
Antimony	6.0	ug/L	5.0	1	05/24/16 12:29	05/24/16 16:07	7440-36-0		
Arsenic	49.8	ug/L	5.0	1	05/24/16 12:29	05/24/16 16:07	7440-38-2		
Cadmium	ND	ug/L	1.0	1	05/24/16 12:29	05/24/16 16:07	7440-43-9		
Copper	ND	ug/L	5.0	1	05/24/16 12:29	05/24/16 16:07	7440-50-8		
Lead	ND	ug/L	5.0	1	05/24/16 12:29	05/24/16 16:07	7439-92-1		
Nickel	ND	ug/L	5.0	1	05/24/16 12:29	05/24/16 16:07	7440-02-0		
Selenium	ND	ug/L	5.0	1	05/24/16 12:29	05/24/16 16:07	7782-49-2		
Silver	ND	ug/L	0.40	1	05/24/16 12:29	05/24/16 16:07	7440-22-4		
Thallium	ND	ug/L	1.0	1	05/24/16 12:29	05/24/16 16:07	7440-28-0		
Zinc	ND	ug/L	25.0	1	05/24/16 12:29	05/24/16 16:07	7440-66-6		
245.1 Mercury		Analytical Method: EPA 245.1 Preparation Method: EPA 245.1							
Mercury	ND	ug/L	0.10	1	05/24/16 10:30	05/24/16 13:31	7439-97-6		
2540D TSS, Low-Level		Analytical Method: SM 2540D							
Total Suspended Solids	2.7	mg/L	1.0	1		05/24/16 12:00			
Hexavalent Chromium by IC		Analytical Method: EPA 218.7							
Chromium, Hexavalent	ND	ug/L	3.0	3		05/24/16 13:54	18540-29-9		
350.1 Ammonia		Analytical Method: EPA 350.1							
Nitrogen, Ammonia	ND	mg/L	0.20	1		05/24/16 11:29	7664-41-7		
4500 Chloride		Analytical Method: SM 4500-Cl-E							
Chloride	15.6	mg/L	5.0	1		05/24/16 10:27	16887-00-6		

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ANALYTICAL RESULTS

Project: BREMO WEEKLY PROCESS

Pace Project No.: 92298698

Sample: T3-160523-0905-S3		Lab ID: 92298698002		Collected: 05/23/16 09:05		Received: 05/23/16 14:04		Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual	
Field Data		Analytical Method:							
Collected By	L. HAMELMA N			1		05/23/16 09:06			
Collected Date	05/23/16			1		05/23/16 09:06			
Collected Time	09:05			1		05/23/16 09:06			
Field pH	8.7	Std. Units	0.10	1		05/23/16 09:06			
HEM, Oil and Grease		Analytical Method: EPA 1664B							
Oil and Grease	ND	mg/L	5.0	1		05/24/16 08:00			
200.7 MET ICP		Analytical Method: EPA 200.7 Preparation Method: EPA 200.7							
Tot Hardness asCaCO3 (SM 2340B	84400	ug/L	3300	1	05/24/16 12:29	05/24/16 16:26			
Trivalent Chromium Calculation		Analytical Method: Trivalent Chromium Calculation							
Chromium, Trivalent	ND	ug/L	5.0	1		05/24/16 18:05	16065-83-1		
200.8 MET ICPMS		Analytical Method: EPA 200.8 Preparation Method: EPA 200.8							
Antimony	5.0	ug/L	5.0	1	05/24/16 12:29	05/24/16 16:14	7440-36-0		
Arsenic	45.2	ug/L	5.0	1	05/24/16 12:29	05/24/16 16:14	7440-38-2		
Cadmium	ND	ug/L	1.0	1	05/24/16 12:29	05/24/16 16:14	7440-43-9		
Copper	ND	ug/L	5.0	1	05/24/16 12:29	05/24/16 16:14	7440-50-8		
Lead	ND	ug/L	5.0	1	05/24/16 12:29	05/24/16 16:14	7439-92-1		
Nickel	ND	ug/L	5.0	1	05/24/16 12:29	05/24/16 16:14	7440-02-0		
Selenium	ND	ug/L	5.0	1	05/24/16 12:29	05/24/16 16:14	7782-49-2		
Silver	ND	ug/L	0.40	1	05/24/16 12:29	05/24/16 16:14	7440-22-4		
Thallium	ND	ug/L	1.0	1	05/24/16 12:29	05/24/16 16:14	7440-28-0		
Zinc	ND	ug/L	25.0	1	05/24/16 12:29	05/24/16 16:14	7440-66-6		
245.1 Mercury		Analytical Method: EPA 245.1 Preparation Method: EPA 245.1							
Mercury	ND	ug/L	0.10	1	05/24/16 10:30	05/24/16 13:34	7439-97-6		
2540D TSS, Low-Level		Analytical Method: SM 2540D							
Total Suspended Solids	1.2	mg/L	1.0	1		05/24/16 12:00			
Hexavalent Chromium by IC		Analytical Method: EPA 218.7							
Chromium, Hexavalent	ND	ug/L	3.0	3		05/24/16 14:07	18540-29-9		
350.1 Ammonia		Analytical Method: EPA 350.1							
Nitrogen, Ammonia	ND	mg/L	0.20	1		05/24/16 11:30	7664-41-7		
4500 Chloride		Analytical Method: SM 4500-Cl-E							
Chloride	18.4	mg/L	5.0	1		05/24/16 10:28	16887-00-6		

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QUALITY CONTROL DATA

Project: BREMO WEEKLY PROCESS

Pace Project No.: 92298698

QC Batch:	GCSV/25068	Analysis Method:	EPA 1664B
QC Batch Method:	EPA 1664B	Analysis Description:	1664 HEM, Oil and Grease
Associated Lab Samples:	92298698001, 92298698002		

METHOD BLANK: 1740412 Matrix: Water

Associated Lab Samples: 92298698001, 92298698002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Oil and Grease	mg/L	ND	5.0	05/24/16 07:56	

LABORATORY CONTROL SAMPLE: 1740413

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Oil and Grease	mg/L	40	36.2	90	78-114	

MATRIX SPIKE SAMPLE: 1740414

Parameter	Units	92298151001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Oil and Grease	mg/L	ND	40	33.7	84	78-114	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

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QUALITY CONTROL DATA

Project: BREMO WEEKLY PROCESS

Pace Project No.: 92298698

QC Batch: MERP/9481

Analysis Method: EPA 245.1

QC Batch Method: EPA 245.1

Analysis Description: 245.1 Mercury

Associated Lab Samples: 92298698001, 92298698002

METHOD BLANK: 1740597

Matrix: Water

Associated Lab Samples: 92298698001, 92298698002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury	ug/L	ND	0.10	05/24/16 13:19	

LABORATORY CONTROL SAMPLE: 1740598

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	ug/L	2.5	2.5	100	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1740599 1740600

Parameter	Units	92298697001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Qual
Mercury	ug/L	ND	2.5	2.5	2.6	2.5	102	99	70-130	3	H3

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

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QUALITY CONTROL DATA

Project: BREMO WEEKLY PROCESS

Pace Project No.: 92298698

QC Batch: MPRP/30588

Analysis Method: EPA 200.7

QC Batch Method: EPA 200.7

Analysis Description: 200.7 MET

Associated Lab Samples: 92298698001, 92298698002

METHOD BLANK: 1583761

Matrix: Water

Associated Lab Samples: 92298698001, 92298698002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Tot Hardness asCaCO3 (SM 2340B	ug/L	ND	3300	05/24/16 15:55	

LABORATORY CONTROL SAMPLE: 1583762

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Tot Hardness asCaCO3 (SM 2340B	ug/L	82700	80100	97	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1583763 1583764

Parameter	Units	92298700001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Qual
Tot Hardness asCaCO3 (SM 2340B	ug/L	88000	82700	82700	178000	163000	108	91	70-130	8	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: BREMO WEEKLY PROCESS

Pace Project No.: 92298698

QC Batch: MPRP/30589 Analysis Method: EPA 200.8
QC Batch Method: EPA 200.8 Analysis Description: 200.8 MET
Associated Lab Samples: 92298698001, 92298698002

METHOD BLANK: 1583765 Matrix: Water

Associated Lab Samples: 92298698001, 92298698002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Antimony	ug/L	ND	5.0	05/24/16 15:58	
Arsenic	ug/L	ND	5.0	05/24/16 15:58	
Cadmium	ug/L	ND	1.0	05/24/16 15:58	
Copper	ug/L	ND	5.0	05/24/16 15:58	
Lead	ug/L	ND	5.0	05/24/16 15:58	
Nickel	ug/L	ND	5.0	05/24/16 15:58	
Selenium	ug/L	ND	5.0	05/24/16 15:58	
Silver	ug/L	ND	0.40	05/24/16 15:58	
Thallium	ug/L	ND	1.0	05/24/16 15:58	
Zinc	ug/L	ND	25.0	05/24/16 15:58	

LABORATORY CONTROL SAMPLE: 1583766

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony	ug/L	50	50.6	101	85-115	
Arsenic	ug/L	50	51.5	103	85-115	
Cadmium	ug/L	5	5.2	104	85-115	
Copper	ug/L	50	51.5	103	85-115	
Lead	ug/L	50	49.4	99	85-115	
Nickel	ug/L	50	51.4	103	85-115	
Selenium	ug/L	50	54.1	108	85-115	
Silver	ug/L	5	5.1	102	85-115	
Thallium	ug/L	50	49.3	99	85-115	
Zinc	ug/L	250	276	110	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1583767 1583768

Parameter	Units	92298698001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Qual
Antimony	ug/L	6.0	50	50	57.5	56.1	103	100	70-130	2	
Arsenic	ug/L	49.8	50	50	102	98.5	105	98	70-130	4	
Cadmium	ug/L	ND	5	5	5.0	5.0	100	99	70-130	1	
Copper	ug/L	ND	50	50	52.1	51.5	102	101	70-130	1	
Lead	ug/L	ND	50	50	50.8	50.3	102	101	70-130	1	
Nickel	ug/L	ND	50	50	52.3	51.7	101	100	70-130	1	
Selenium	ug/L	ND	50	50	53.7	50.8	104	98	70-130	6	
Silver	ug/L	ND	5	5	5.1	5.1	102	101	70-130	1	
Thallium	ug/L	ND	50	50	50.4	50.9	100	101	70-130	1	

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QUALITY CONTROL DATA

Project: BREMO WEEKLY PROCESS

Pace Project No.: 92298698

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1583767 1583768											
Parameter	Units	92298698001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Qual
Zinc	ug/L	ND	250	250	268	256	106	101	70-130	4	

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QUALITY CONTROL DATA

Project: BREMO WEEKLY PROCESS

Pace Project No.: 92298698

QC Batch: WET/45121

Analysis Method: SM 2540D

QC Batch Method: SM 2540D

Analysis Description: 2540D Total Suspended Solids

Associated Lab Samples: 92298698001, 92298698002

METHOD BLANK: 1740722

Matrix: Water

Associated Lab Samples: 92298698001, 92298698002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Suspended Solids	mg/L	ND	1.0	05/24/16 11:58	

LABORATORY CONTROL SAMPLE: 1740723

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Suspended Solids	mg/L	250	236	94	90-110	

SAMPLE DUPLICATE: 1740724

Parameter	Units	92298636001 Result	Dup Result	RPD	Qualifiers
Total Suspended Solids	mg/L	ND	ND		

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QUALITY CONTROL DATA

Project: BREMO WEEKLY PROCESS

Pace Project No.: 92298698

QC Batch: WETA/58091

Analysis Method: EPA 218.7

QC Batch Method: EPA 218.7

Analysis Description: Chromium, Hexavalent IC

Associated Lab Samples: 92298698001, 92298698002

METHOD BLANK: 1584429

Matrix: Water

Associated Lab Samples: 92298698001, 92298698002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chromium, Hexavalent	ug/L	ND	1.0	05/24/16 14:20	

LABORATORY CONTROL SAMPLE: 1584430

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chromium, Hexavalent	ug/L	.075	.076J	101	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1584431 1584432

Parameter	Units	92298697001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Qual
Chromium, Hexavalent	ug/L	ND	.22	.22	.63J	.63J	101	98	85-115	1	

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QUALITY CONTROL DATA

Project: BREMO WEEKLY PROCESS

Pace Project No.: 92298698

QC Batch: WETA/27723

Analysis Method: EPA 350.1

QC Batch Method: EPA 350.1

Analysis Description: 350.1 Ammonia

Associated Lab Samples: 92298698001, 92298698002

METHOD BLANK: 1740516

Matrix: Water

Associated Lab Samples: 92298698001, 92298698002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Nitrogen, Ammonia	mg/L	ND	0.20	05/24/16 11:21	

LABORATORY CONTROL SAMPLE: 1740517

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Nitrogen, Ammonia	mg/L	5	5.0	100	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1740518 1740519

Parameter	Units	92298697001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Qual
Nitrogen, Ammonia	mg/L	ND	5	5	5.3	5.3	106	105	90-110	0	

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QUALITY CONTROL DATA

Project: BREMO WEEKLY PROCESS

Pace Project No.: 92298698

QC Batch:	WETA/27720	Analysis Method:	SM 4500-Cl-E
QC Batch Method:	SM 4500-Cl-E	Analysis Description:	4500 Chloride
Associated Lab Samples: 92298698001, 92298698002			

METHOD BLANK: 1740404 Matrix: Water

Associated Lab Samples: 92298698001, 92298698002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	ND	5.0	05/24/16 10:22	

LABORATORY CONTROL SAMPLE: 1740405

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	20	20.6	103	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1740406 1740407

Parameter	92298697001		MS	MSD	MS	MSD	MS	MSD	% Rec	RPD	Qual
	Units	Result	Spike Conc.	Spike Conc.							
Chloride	mg/L	23.0	10	10	32.3	32.5	93	95	90-110	1	

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REPORT OF LABORATORY ANALYSIS

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QUALIFIERS

Project: BREMO WEEKLY PROCESS

Pace Project No.: 92298698

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

Acid preservation may not be appropriate for 2 Chloroethylvinyl ether, Styrene, and Vinyl chloride.

A separate vial preserved to a pH of 4-5 is recommended in SW846 Chapter 4 for the analysis of Acrolein and Acrylonitrile by EPA Method 8260.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

LABORATORIES

PASI-A Pace Analytical Services - Asheville

PASI-C Pace Analytical Services - Charlotte

PASI-O Pace Analytical Services - Ormond Beach

ANALYTE QUALIFIERS

H3 Sample was received or analysis requested beyond the recognized method holding time.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

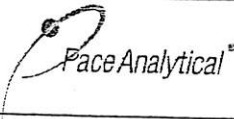
Project: BREMO WEEKLY PROCESS

Pace Project No.: 92298698

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
92298698001	T1-160523-0832-S3		FLD/		
92298698002	T3-160523-0905-S3		FLD/		
92298698001	T1-160523-0832-S3	EPA 1664B	GCSV/25068		
92298698002	T3-160523-0905-S3	EPA 1664B	GCSV/25068		
92298698001	T1-160523-0832-S3	EPA 200.7	MPRP/30588	EPA 200.7	ICP/18288
92298698002	T3-160523-0905-S3	EPA 200.7	MPRP/30588	EPA 200.7	ICP/18288
92298698001	T1-160523-0832-S3	Trivalent Chromium Calculation	ICP/18289		
92298698002	T3-160523-0905-S3	Trivalent Chromium Calculation	ICP/18289		
92298698001	T1-160523-0832-S3	EPA 200.8	MPRP/30589	EPA 200.8	ICPM/12366
92298698002	T3-160523-0905-S3	EPA 200.8	MPRP/30589	EPA 200.8	ICPM/12366
92298698001	T1-160523-0832-S3	EPA 245.1	MERP/9481	EPA 245.1	MERC/9116
92298698002	T3-160523-0905-S3	EPA 245.1	MERP/9481	EPA 245.1	MERC/9116
92298698001	T1-160523-0832-S3	SM 2540D	WET/45121		
92298698002	T3-160523-0905-S3	SM 2540D	WET/45121		
92298698001	T1-160523-0832-S3	EPA 218.7	WETA/58091		
92298698002	T3-160523-0905-S3	EPA 218.7	WETA/58091		
92298698001	T1-160523-0832-S3	EPA 350.1	WETA/27723		
92298698002	T3-160523-0905-S3	EPA 350.1	WETA/27723		
92298698001	T1-160523-0832-S3	SM 4500-CI-E	WETA/27720		
92298698002	T3-160523-0905-S3	SM 4500-CI-E	WETA/27720		

REPORT OF LABORATORY ANALYSIS

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	Document Name:	Document Revised: 26FEB2016
	Sample Condition Upon Receipt(SCUR)	Page 1 of 2
	Document No.: F-MEC-CS-009-rev.02	Issuing Authority: Pace Mechanicsville Quality Office

Sample Condition Upon Receipt

Client Name:

Golder/Bremo

Project #:

WO# : 92298698



92298698

Courier:

☐ Commercial

☐ Fed Ex

☒ Pace

☐ UPS

☐ USPS

☐ Other:

☐ Client

Custody Seal Present?

☒ Yes

☐ No

Seals Intact?

☒ Yes

☐ No

Packing Material:

☐ Bubble Wrap

☒ Bubble Bags

☐ None

☐ Other:

Thermometer:

☒ RMD001

☐

Type of Ice:

☒ Wet

☐ Blue

☐ None

☒ Samples on ice, cooling process has begun

Correction Factor: 0.0°C

Cooler Temp Corrected (°C):

1.0

Temp should be above freezing to 6°C

USDA Regulated Soil (☐ N/A, water sample)

Did samples originate in a quarantine zone within the United States: CA, NY, or SC (check maps)?

☐ Yes ☐ No

Did samples originate from a foreign source (internationally, including Hawaii and Puerto Rico)? ☐ Yes ☐ No

Date/Initials Person Examining Contents 5-23-16

Biological Tissue Frozen? ☐ Yes ☐ No ☐ N/A

			COMMENTS:
Chain of Custody Present?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	1.	
Chain of Custody Filled Out?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	2.	
Chain of Custody Relinquished?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	3.	
Sampler Name and/or Signature on COC?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	4.	
Samples Arrived within Hold Time?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	5.	
Short Hold Time Analysis (<72 hr)?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	6.	
Rush Turn Around Time Requested?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	7.	
Sufficient Volume?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	8.	
Correct Containers Used?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	9.	
-Pace Containers Used?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A		
Containers Intact?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	10.	
Filtered Volume Received for Dissolved Tests?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	11.	Note if sediment is visible in the dissolved container
Sample Labels Match COC?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	12.	
-Includes Date/Time/ID/Analysis Matrix: <u>WW</u>			
All containers needing acid/base preservation have been checked?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	13.	
All containers needing preservation are found to be in compliance with EPA recommendation? (HNO ₃ , H ₂ SO ₄ , HCl<2; NaOH >9 Sulfide, NaOH>12 Cyanide)	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A		
Exceptions: VOA, Coliform, TOC, Oil and Grease, DRO/8015 (water) DOC,LLHg	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A		
Samples checked for dechlorination	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	14.	
Headspace in VOA Vials (>5-6mm)?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	15.	
Trip Blank Present?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	16.	
Trip Blank Custody Seals Present?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A		
Pace Trip Blank Lot # (if purchased):			

CLIENT NOTIFICATION/RESOLUTION

Field Data Required? ☐ Yes ☐ No

Person Contacted:

Date/Time:

Comments/Resolution:

Project Manager SCURF Review:

NMG

Date:

5/23/16

Project Manager SRF Review:

NMG

Date:

5/24/16

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. Out of hold, incorrect preservative, out of temp, incorrect containers)



CHAIN-OF-CUST Y / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Section A Required Client Information: Company: Golder Associates Address: 2108 W Laburnum Ave, Ste 200 Richmond, VA 23227 Email To: Mornand@golder.com Phone: 804-561-0129 Fax: 804-358-2900 Requested Due Date/TAT: 24 HOUR

Section B Required Project Information: Report To: Mornand@golder.com Copy To: Martha_Smith@golder.com Ron_Difrancesco@golder.com Purchase Order No.: Project Name: Brema Weekly Project Number: 1520-347.2

Section C Invoice Information: Attention: Meagan Ormand Company Name: Golder Associates Address: galapdataentry_invoices@golder.com Pica Quote Reference: Pica Project Manager: Pica Profile #:

REGULATORY AGENCY NPDES GROUND WATER DRINKING WATER UST RCRA OTHER

Valid Matrix Codes: MATRIX CODE DW WT WW P SL WP AR OT TS. SAMPLE ID (A-Z, 0-9 / -) Sample IDs MUST BE UNIQUE. MATRIX CODE (see valid codes to left). SAMPLE TYPE (G=GRAB C=COMP). DATE TIME DATE TIME. SAMPLE TEMP AT COLLECTION. # OF CONTAINERS. Unpreserved H2SO4 HNO3 HCl NaOH Na2S2O3 Methanol Other. Analysis Test: 200.8 - Sb, As, Cd, Cr (III) 200.8 - Pb, Ni, Se, Zn, Cu 200.8 - Ag, Th 245.1 - Hg 218.6(7) - Cr (VI) SM4500 - Chloride 1664B - Oil&Grease 350.1 - Ammonia-N SM2540D - TSS 200.7 - Hardness Residual Chlorine (Y/N).

ITEM #	Valid Matrix Codes	MATRIX CODE	SAMPLE TYPE	DATE	TIME	DATE	TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives	Analysis Test	Requested Analysis Filtered (Y/N)	Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
1	T1-160523-0832-S3	WW	G	5/23/16	08:32	10	X	X	X	X	X	X	92.298698	Y	Y	Y
2	T3-160523-0905-S3	WW	G	5/23/16	09:05	10	X	X	X	X	X	X		Y	Y	Y
3																
4																
5																
6																
7																
8																
9																
10																
11																
12																

ADDITIONAL COMMENTS: All analyses to be performed under Golder-Pace MSA dated 12/19/2008. RELINQUISHED BY / AFFILIATION: Golder DATE: 5/23/16 TIME: 1404 ACCEPTED BY / AFFILIATION: DATE: 5-23 TIME: 1404 SAMPLE CONDITIONS: Y Y Y

SAMPLER NAME AND SIGNATURE: PRINT Name of SAMPLER: L. Howlerson SIGNATURE of SAMPLER: DATE Signed (MM/DD/YY): 05/23/16